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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

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22 March 1973

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): Restoring the Combat Effectiveness of Rocket Units

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought." The authors identify actions necessary to restore launch capability to rocket units, such as forming new units from partially effective units, redistributing targets, and reallocating command and communications responsibilities. They place much emphasis on the types of fire threats to deployed rocket units. The article states that a rocket unit is still combat effective if forty percent of its launch components survive a nuclear strike. It appeared in Issue No. 1 (89) for 1970.

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies.

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[redacted]

W. E. Colby
Deputy Director for Operations

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Intelligence Information Special Report

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COUNTRY USSR

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DATE OF INFO. Early 1970

DATE 22 March 1973

SUBJECT

MILITARY THOUGHT (USSR): Restoration of Combat Effectiveness of Rocket Large Units and Units in Operations

SOURCE Documentary.

SUMMARY

The following report is a translation from Russian of an article which appeared in Issue No. 1 (89) for 1970 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought." The authors of this article are Col. P. Dubok, Col. B. Strelchenko, Lt. Col. V. Milovanov, and Lt. Col. P. Morkovkin. Their proposals for restoration of combat effectiveness emphasize prosaic actions such as redistributing targets from damaged to surviving units, transferring control from destroyed higher control points to lower-ranking units, and establishing reliable reporting systems for timely assessment of the post-strike situation. Much of the article is devoted to discussion in detail of the types of fires which rocket units will face under various meteorological and vegetation conditions. The threshold of effectiveness for rocket units is given as forty percent, and fifty percent for support elements.

END OF SUMMARY
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COMMENT:

Col. B. Strelchenko was the author of two articles which appeared in the SECRET version: Issue No. 4 for 1960 titled "Enemy Nuclear Artillery, Free Rockets and Guided Missiles," and Issue No. 5 (60) for 1961 titled "Ways of More Effectively Combatting Enemy Means of Nuclear Attack in an Offensive Operation" (CSDB-3,650,600 - 19 July 1962). He did not have his doctorate at that time. He is also a senior instructor at the

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Military Engineering Academy i/n Dzerzhinskiy. No identifying information is available on the other officers.

Military Thought has been published by the USSR Ministry of Defense in three versions in the past--TOP SECRET, SECRET and RESTRICTED. There is no information as to whether or not the TOP SECRET version continues to be published. The SECRET version is published three times annually and is distributed down to the level of division commander.

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Restoration of Combat Effectiveness of Rocket Large Units and Units in Operations

by Col. P. Dubok
Lecturer and Candidate of Military Sciences
Col. B. Strelchenko
Lecturer and Doctor of Military Sciences
Lt. Col. V. Milovanov
Lecturer and Candidate of Military Sciences and
Lt. Col. P. Morkovkin

In our periodical press* and in recent training exercises, much attention has been given to the restoration of combat effectiveness of troops in present day operations. In this connection we would like to offer some thoughts which directly concern rocket troops.

The restoration of combat effectiveness of rocket (rocket-technical) large units and units which have suffered the effects of weapons of mass destruction includes the restoration of disrupted control and the clarification (allocation) of combat tasks by combat effective rocket (rocket-technical) units; the conduct of rescue (medical evacuation) work and special treatment in areas of nuclear bursts; and the replacement of losses in personnel, weapons, and equipment.

For the most part, there must be advance planning for measures involving the restoration of disrupted control, aid to casualties, the replacement of losses and special treatment. These measures can be defined more precisely only upon receipt of operational directives.

The commander (staff) of troops of a front (army) has overall command of the organization and conduct of these measures. All of the basic work is done by the commander (staff)

*Collection of Articles of the Journal "Military Thought," No. 1 (77), No. 3 (79), 1966; No. 2 (84), 1968.

of rocket troops and artillery and by the chief of service (department) of rocket-artillery armament of a front (army). While an operation is still in the preparatory stage, these officers coordinate with the operational directorate (department) and with the chiefs of arms of troops and services of a front (army) regarding: the exchange of information on nuclear and chemical strikes and on zones of contamination, devastation, flooding, and fires; mutual assistance among units of the various arms of troops in eliminating the aftereffects of an enemy strike with weapons of mass destruction; the replacement of losses in weapons, combat equipment, and supplies; the evacuation and repair of damaged weapons and combat equipment; and the conduct of special treatment.

In case any of our rocket units (subunits) are put out of action by enemy nuclear and chemical strikes while our own rocket strikes are in the planning stage, our plans provide for the redistribution of our strike objectives. For this purpose several rocket battalions (launch batteries) are designated for the destruction of important objectives, some as primary objectives and others as alternate objectives.

In order to restore disrupted control in the staff of rocket troops and artillery of a front (army) within a short period of time, various possible alternatives are being developed for the transfer of control to the forward command post (PKP) (alternate command post - ZKP), or, if the command post (KP) and the PKP (ZKP) of a front (army) are both out of action at the same time, to the control point of the commander of rocket troops and artillery of the army (division); a procedure is also being established for transferring control of a rocket brigade which is directly subordinate to the commander of rocket troops and artillery of a front or army (see Table 1).

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Table 1

Possible Variants for Restoring Disrupted Control Of Rocket Forces of a Front (Army)

Installations Sustaining an Enemy Nuclear Strike	Measures for Restoring Disrupted Control
KP of the front (army)	Control of rocket troops is transferred to the PKP (ZKP). The deputy commander of rocket forces and artillery assumes command of the rocket forces of the front (army).
KP and PKP (ZKP) at the same time	Command of the rocket forces is transferred to the army (division) for a period of time to be indicated by message.
KP of a rocket brigade	The commander of one rocket battalion assumes command and reports by message to the staff of rocket troops and artillery of the front (army).

In organizing the control of rocket troops, we also provide for the capability to receive a continuous flow of reports on the status of rocket (rocket-technical) large units and units, reports which are necessary for a preliminary evaluation of their combat effectiveness. These reports, in the form of short previously established messages, will be transmitted immediately after enemy nuclear (chemical) strikes.

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In order to make a proper estimate of time factors and to ensure a high quality of rescue and medical evacuation work, it is necessary above all to evaluate the possible nature and volume of this work in the foci of nuclear destruction; to determine operating procedures for rocket and rocket-technical large units and units in case they are subjected to a strike; and to set up procedures for mutual assistance among units, and operating procedures for composite detachments for the elimination of aftereffects.

To evaluate the nature and volume of work in centers of nuclear destruction, it is advisable to use the following method of projection.

It is first necessary to establish the degree of overgrowth and the danger of fire in the siting area (area of deployment) occupied by this or that unit (subunit) and the necessary measures for their defense. The fire situation in deployment areas of rocket (rocket-technical) large units and units is estimated in accordance with the indicators of fire danger (Table 2) and overgrowth (Table 3).

Table 2

Indicators of Danger from Fire
In a Coniferous Forest

Extreme Danger	Serious Danger	Insignificant Danger	No Danger
Long spells of very hot weather. No precipitation. Air temperature not under 20° C, relative humidity under 25 percent. High pressure.	Long spells of hot weather with periodic inconsequential precipitation. Relative humidity 50 to 70 percent. Dry forest.	Frequent rains. Relative humidity 70 to 80 percent. Forest floor damp.	Several days of rain. Damp forest. High relative humidity.

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Table 3

Overgrowth in a Wild Coniferous Forest
And the Probability of Fire

Slight Overgrowth	Danger of Fire	Average Overgrowth	Danger of Fire
Dry grass, ground covered with fallen leaves--fire possible.	20%	Dry grass, reindeer moss (lichen), ground covered with pine needles--low-burning fire possible.	35%

Heavy Overgrowth	Danger of Fire	Very Heavy Overgrowth	Danger of Fire
Dry grass, dead trees, stumps, ground covered with pine needles--low-burning fire possible.	65%	Dry debris from timber-cutting, dry grass, twigs and branches, ground covered with pine needles--low-burning fire spreading to treetop level.	95%

It is then possible to determine zones of irrecoverable and medical losses, zones of damage to combat equipment, and zones of barriers and fires, by taking into account the nature of the

enemy nuclear strike expected (the presumed yield and type of burst) and the disposition of personnel and combat equipment within each unit's area. By using a previously prepared transparent overlay, it is possible to determine the elements of a combat formation which fall within the given attack zone, and to determine the possible volume of rescue and medical evacuation work which will be needed in the center of nuclear destruction.

It is recommended that the measures for the restoration of combat effectiveness of rocket and rocket-technical large units (units) be added as an explanatory note to the plan for the combat use of rocket troops and artillery of a front (army), and the data necessary for control be included in the control chart for rocket troops and artillery.

The following is a general work plan of a commander and staff of rocket troops and artillery of a front (army) for the restoration of combat effectiveness of rocket and rocket-technical large units (units) after employment by the enemy of weapons of mass destruction: the restoration of disrupted control of rocket troops; the evaluation of the combat effectiveness of rocket and rocket-technical large units and units; the clarification of combat tasks for combat effective units and subunits; the organization and carrying out of rescue and medical evacuation work in areas of a nuclear burst; the reforming of units and subunits which suffered casualties; the creation of composite rocket battalions and technical subunits; and the replacement of personnel and combat equipment losses.

Besides restoring disrupted control, the commander and staff of rocket troops and artillery simultaneously assess the combat effectiveness of rocket (rocket-technical) large units (units) against whom the enemy has delivered nuclear and chemical strikes; and the radiation, chemical, and fire situation developing in siting and deployment areas and the influence of this situation on the organization of combat operations and on the conduct of rescue and medical evacuation work in centers of nuclear and chemical destruction. They also study data which allow them to estimate the nature and scale of subsequent enemy use of weapons of mass destruction.

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By combat effectiveness of rocket and rocket-technical units, we mean the quantitative and qualitative indicators of their combat condition and capability which permit assigned tasks to be resolved within prescribed time frames and with the required effectiveness. Thinking of combat effectiveness of a large unit (unit) in the narrow sense of the word should become a thing of the past. Proceeding from this, three types (levels) of combat effectiveness may be established: combat effective, partially combat effective, and not combat effective. Loss of combat effectiveness can be permanent or temporary. What are the criteria for assessing the combat effectiveness level of rocket troops? The fact that they are composed of various dedicated units (subunits) makes it necessary to account for the component units separately, not only according to the degree to which each unit is built up with personnel and combat equipment, but also according to the tasks to be carried out. Therefore, in assessing the combat effectiveness of a rocket brigade (battalion), we must consider whether they are able to carry out strikes without any delay, i.e., the main criterion should be the number of remaining launchers and control points. So far as rocket-technical units are concerned, the criterion for their combat effectiveness is their functional and transport capability, of which the former is the more important.

From this we can derive:

a. for a rocket brigade: a brigade has partially lost effectiveness if its communications in the command system of battery to battalion to commander of rocket troops and artillery of a front (army) have become unstable, but it retains at least 50 to 60 percent of its launch batteries, one rocket-technical platoon, two meteorological stations and a technical battery; a brigade is not combat effective if more than 60 percent of its launchers have been lost, its command system disrupted, and its rocket-technical subunits destroyed;

b. a mobile rocket-technical base may be considered combat effective if it has communications with the chief of rocket-artillery armament service (department) of a front (army) and if the assembly brigades, technical and transport (parkovoy)

batteries retain their functional capability. Partial loss of combat effectiveness of a base occurs when its capability to assemble and transport rockets has been reduced no more than 50 percent.

The determination of levels (types) of combat effectiveness significantly shortens the time needed to assess the status of rocket and rocket-technical large units (units) after sustaining nuclear (chemical) attacks; speeds up the assessment of our capabilities for mounting rocket strikes; and facilitates the planning of combat actions (with due consideration to changes in the composition of rocket groupings) and the deployment of reserves to replace losses.

A preliminary assessment of troop combat effectiveness after enemy nuclear strikes can be made by the commander and staff of rocket troops and artillery on the basis of messages and reports from the commanders of rocket large units and units. The exchange of such radio messages takes relatively little time. Thus, in exercises in the Leningrad Military District in 1965 and in the Belorussian Military District in 1967, from two to five minutes were required for the staff of rocket troops and artillery of a front to receive signals and messages from rocket, rocket-technical, and artillery large units and units. These messages keep the staff of rocket troops and artillery supplied with the necessary information to assess the status of rocket (rocket-technical) large units (units) after an enemy nuclear strike and to decide whether to mount rocket strikes with our remaining large units and units. Rocket subunits and units which do no reply within the stipulated time to a message from the commander of rocket troops and artillery are considered to be out of action and incapable of fulfilling their previously assigned combat tasks. Enemy objectives (targets) not yet destroyed will be distributed among the combat effective units.

Approximate losses of personnel and combat equipment in areas of a nuclear burst may be determined very simply by the graphic estimate method: the center (ground zero) of a nuclear burst is plotted on a map, and, on the basis of the yield and type of burst, zones of destruction to personnel and of damage to combat equipment are indicated thereon, after which the number of subunits in the zones of destruction is derived.

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It is advisable to make an assessment of fire hazards by analyzing the condition of the forest, the meteorological conditions in the areas of the nuclear burst, and the deployment of units; and then, from the basic indicators as to how a convection column would behave, to determine what type of forest fire might develop and how it might influence the fulfilment of combat tasks and the conduct of rescue (medical evacuation) work. (See Table 4.)

The staff of rocket troops and artillery of a front (army) will receive more complete information on the situation which developed after enemy nuclear strikes in reports from the commanders of rocket (rocket-technical) large units (units) after they have issued instructions to subordinate units (subunits) for the launching of rockets (preparation of combat units and delivery vehicles). These reports must include: which elements of the combat formation of a large unit (unit) sustained nuclear strikes and the approximate yield and type of burst; personnel and equipment losses including the amount of special treatment needed; the levels of radiation and zones of radioactive contamination; measures taken to eliminate the aftereffects of nuclear strikes; and the necessary assistance required from the senior commander.

After completing their assessment of the combat effectiveness of rocket and rocket-technical large units and units, the commander and staff of rocket troops and artillery will prepare a report for the commander of troops of the front (army).

In our opinion this report should include the following data: which rocket (rocket-technical) and artillery large units (units) have sustained enemy nuclear strikes (the number, yield and type of burst sustained by each large unit (unit); personnel and equipment losses of these units and an assessment of their combat effectiveness; the units in areas with high radiation levels and requiring withdrawal to uncontaminated areas; the level of dosage to which personnel will be exposed while in areas of radioactive contamination; the number of personnel and equipment requiring special treatment; and the measures which must be taken to restore the combat effectiveness of rocket troops. The conclusions will include

Table 4

Determination of Type of Forest Fire Based on Indications
Of the Behavior of a Convection Column

Type of Fire	Presence and Type of Convection Column	Color of Smoke	Characteristics of Smoke Movement in Column	Possible Course of Fire Development
Weak, low-burning	No column; above the fire a plume in the form of puffs	White or Gray	With light wind smoke plume will rise and resemble a smoke column	Slight
Strong, low-burning	Above fire's forward edge is a convection column made up of smoke puffs	Black	Column slanting at wind velocity of 3 m/sec	With slanting column; sparks may be scattered
Treetop level, weak, steady	Well-defined column rising vertically to 600-1000 meters. Sharp increase in wind velocity causes column to assume T-shape.	Black	Heavy, pulsating sequence of smoke puffs	With a 3 m/sec wind, draft causes fire to develop into a column. With a 4-5 m/sec wind the column will slant. Sparks may be scattered to a great distance.
Treetop level, strong	Well-defined column to height of 2000 meters and more, sometimes mushroom-shaped	Black	Billows and puffs of smoke all along column. Motion of smoke in column often in spirals	Scattering of sparks to a distance of 4 km

an assessment of the combat effectiveness of the rocket troops and artillery of the front (army) as a whole and will show how many launchers are available to carry out tasks.

Rescue and restoration work in centers of destruction will be conducted after a preliminary assessment of the radiation and fire conditions. In line with a previously prepared plan, neighboring units and composite detachments may be detailed to assist rocket (rocket-technical) units which have sustained nuclear strikes. See Table 5 for an example of organizing mutual assistance among large units and units of the rocket forces and artillery of an army.

Table 5

Actions of Rocket and Rocket-Technical Units Of an Army After a Nuclear Strike
(one variant)

Objectives Sustaining A Nuclear Strike	Units Assisting Those Attacked
Army rocket brigade	Mobile rocket-technical base; regiment of an artillery division; composite detachment of an army for elimination of aftereffects.
Army mobile rocket-technical base	Rocket brigade; regiment of an artillery division; composite detachment of an army for elimination of aftereffects.

The staff of rocket troops and artillery of a front (army) uses technical means of communications to transmit orders to units (composite detachments for the elimination of aftereffects)

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regarding actions in areas of nuclear bursts. These units are given brief reports on the status of the centers of destruction and a procedure for conducting rescue and medical evacuation work. The commanders of rocket (rocket-technical) large units and units must, in turn, determine the most favorable and secure routes for moving launch (technical, transport) batteries and assembly brigades out of threatened areas; routes for composite detachments assigned to eliminate aftereffects and for evacuating casualties to medical facilities (and for removing damaged combat equipment to collection points for damaged vehicles); and the most secure areas for forming units and subunits (and collection points for damaged vehicles, special treatment, etc.). Traffic routes will as a rule be designated along roads with hard surfaces and wide rights-of-way, and deployment areas will be determined on the basis of sparsity of growth and a large number of water sources.

Rocket (rocket-technical) units and subunits which have lost their combat effectiveness will be reformed on a front-wide (army-wide) scale. For this purpose the commanders of rocket large units (units) and the commander of the composite detachment for the elimination of aftereffects must be assigned areas for forming rocket battalions and technical subunits, within which launch batteries will be the first to be formed. In our opinion, personnel replacements for these units may be drawn from batteries which are not combat effective, as well as from support and service subunits. It may also become necessary to take specialists for the preparation of control systems, computers, engine installations, and topographic geodesy from combat effective subunits, and transport from support and service subunits. Also, part of the equipment complement of reformed subunits may be obtained through the repair of damaged equipment.

Regarding the restoration of mobile rocket-technical bases, it is first necessary to form crews of technical batteries and assembly brigades from the personnel and equipment which remained combat effective after a nuclear strike. If it is not possible to form such crews, then the personnel and usable combat equipment of the base will be sent to a predetermined area where it will subsequently be possible to form new rocket-technical units and subunits.

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Rocket and rocket-technical subunits which have retained their combat effectiveness will, as a rule, be transferred to other rocket battalions and mobile rocket-technical bases. Experience in creating such composite rocket battalions (mobile rocket-technical bases) shows that it does not demand great expenditures of time or special organizational measures; and there are grounds for believing that this type of reforming will find wide application in operations.

In taking measures to restore the combat effectiveness of rocket (rocket-technical) large units (units), the staff of rocket troops and artillery will work very closely with the operations directorate (department) and chiefs of arms of troops and services of a front (army).

This is dictated by the fact that rocket troops, because of their inherent characteristics and the significance of their tasks, have a particular need for the supplementary detailing of forces and equipment for the elimination of aftereffects following an enemy attack with weapons of mass destruction. The restoration of their combat effectiveness, which to a great extent predetermines the capability of a front (army) to conduct active military operations and to withstand enemy nuclear forces, represents the main task of commands, staffs, and political organs of all levels.

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